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IS 8141 (1976): Tolerances for screw threads used in aeronautics [TED 14: Aircraft and Space Vehicles]

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Indian Standard (Reaffirmed 2005)

TOLERANCES FOR SCREW THREADS USED IN AERONAUTICS

1. Scope — Covers the design profile and tolerances for ISO metric screw threads used in aeronautics. The basic profile is as specified in IS : 4218-1967 ' ISO metric screw threads '.

2. Symbols — The various symbols used in this standard shall denote the quantities mentioned below against each:

D = major diameter of internal thread
D_1 = minor diameter of internal thread
D_2 = pitch diameter of internal thread
d = major diameter of external thread
d_2 = pitch diameter of external thread
d_3 = minor diameter of external thread
P = pitch
r_1 = root radius = 0·1 P, *Min*
T = tolerance on pitch diameter
T_k = 1·25 T, with a minimum value of $T + 30\ \mu m$

3. Classes of Screw Threads — Shall be as given below:

Class II — Coarse
Class III — Fine
Class IV — Finest

4. Form of Screw Threads — The basic profile and design profile of screw and nut threads shall be as given in Fig. 1.

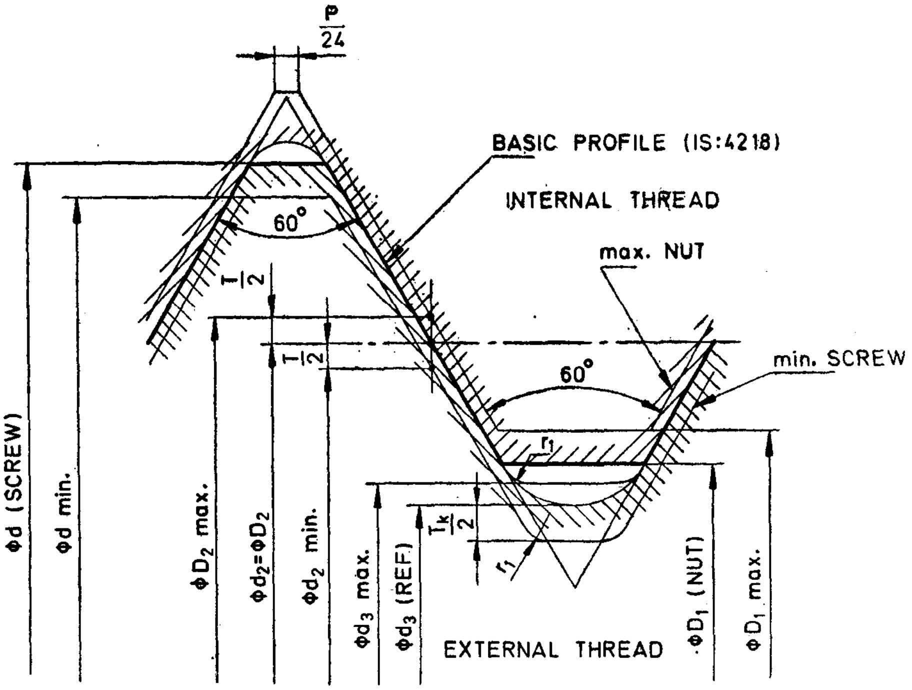

FIG. 1 BASIC AND DESIGN PROFILE OF SCREW AND NUT THREADS

Screw Threads Sectional Committee, EDC 70 [Ref : Doc : EDC 70 (2437)]

Adopted 23 July 1976	© December 1976, ISI	[redacted] Gr 2

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5. Tolerances

5.1 Tolerances on different classes of screw threads shall be as given in Table 1, alongwith the pitch-diameter combinations.

5.2 The pitch diameter tolerance on the nut is always entirely on the positive side with a lower deviation zero. Similarly the pitch diameter tolerance on screw is always entirely on negative side with upper deviation zero.

TABLE 1 PITCH DIAMETER COMBINATION AND TOLERANCES

(*Clause* 5.1 and *Fig.* 1)

Tolerance values are in micrometres.

Dimension (mm)		Tolerance on d_2 or D_2			Tolerance on d		Tolerance on D_1
Pitch	Diameter *d* or *D*	Class II	Class III	Class IV	Class II Class III − 0	Class IV − 0	All Classes + 0
0·25	1	56	—	—	− 66	—	+ 80
	1·2						
0·35	1·6	63			− 90*		+ 100
0·4	2						+ 115
0·45	2·5						+ 125
0·5	3		40				+ 135
0·7	4	80	50	32	− 120*	− 75**	+ 175
0·75	6 to 10		50				+ 180
0·8	5		50				
1	6	100	63	40			
	7 to 10				− 150*	− 90**	
	11 to 22				− 150	− 110	
	24	125	80	50	− 150	− 110	
1·25	8	100	63	40	− 150*	− 90**	
1·5	10	125	80	50	− 150*	− 90**	
	12 to 18				− 180*	− 110**	
	20 to 30				− 210*	− 130**	+ 210
	33 to 36				− 210	− 130	
	39 to 80	160	100	63	− 210	− 130	
2	22 to 30	160	100	63	− 210*	− 130**	
	33 to 50	160			− 250*	− 160**	+ 250
	52 to 85				− 250	− 160	
	90 to 150	200	125	80	− 250	− 160	
3	85 to 120	200	125	80	− 330	− 220**	+ 330
	125 to 150	250	160	100		− 220	

(*) = h12 (**) = h11

6. Designation

6.1 Designation shall consist of:

a) Size designation, and
b) Class designation.

6.1.1 *Size designation* — Size of a screw shall be designated by the letter ' M ' followed by the diameter and the pitch.

6.1.2 *Class designation* — To indicate whether the screw thread is Class II, Class III or Class IV.

Example:

A screw thread of diameter 6 mm, pitch 1 mm and conforming to Class II, shall be designated as:

M6 × 1 — Class II

EXPLANATORY NOTE

As the basic profile specified in this standard is the same as that of ISO metric screw threads covered in IS : 4218-1967 it is not proposed to formulate a separate Indian Standard on gauging practice for screw threads used in aeronautics. It is recommended that for gauging practice for these screw threads information given in IS : 2334-1975 ' Gauging practice for ISO metric screw threads (*first revision*) ' may be drawn upon.

In the preparation of this standard, considerable assistance has been derived from NF : L 05-222 Tolerances pour filetages ISO, applications aeronautiques (Tolerances for ISO screw threads, aeronautical usage) issued by Bureau De Normalisation De L' Aeronautique.

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